

THE NASA'S COSMOS PROJECT

Kenneth R. Lang

1) HIGHLIGHTS OF EXISTING WORK

WEB SITE – <http://ase.tufts.edu/cosmos/>

**SCIENTIFIC SUBSTANCE, HISTORICAL
AUTHORITY, HUMAN INTEREST,
VISUALLY EXCITING**

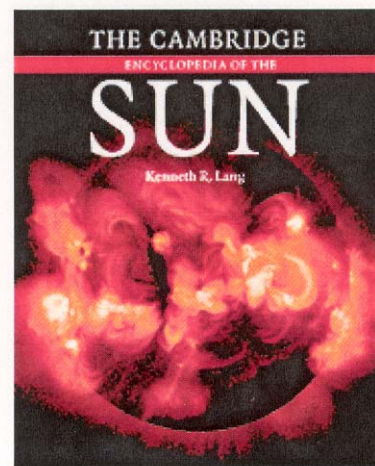
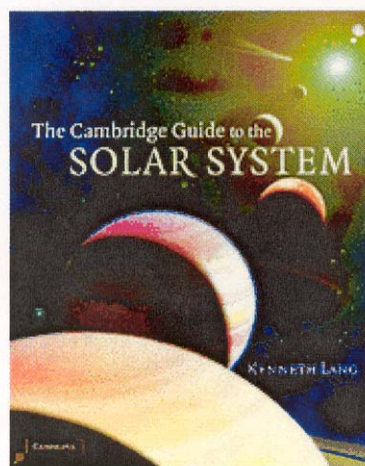
**FOUNDATION TWO BOOKS – CAMBRIDGE
UNIVERSITY PRESS**

**THE CAMBRIDGE ENCYCLOPEDIA OF
THE SUN, 2001**

**THE CAMBRIDGE GUIDE TO THE
SOLAR SYSTEM, 2003**

NASA'S COSMOS – Ken Lang

<http://ase.tufts.edu/cosmos/>
HOME PAGE



NASA's COSMOS

<http://ase.tufts.edu/cosmos/>

A. PRESENTATION OF SPACE SCIENCE

NAVIGATION TABS –

**PLANETS AND MOONS, SUN,
SEARCH FOR LIFE, HUMAN IMPACT**

**SIDE BARS SCIENTIFIC THEMES, EACH
WITH:**

- **OVERVIEW** – KEY IDEAS, FUNDAMENTALS.
- **TUTORIAL** – ABRIDGED TEXT WITH IMAGES.
- **IMAGES** – MORE THAN 450 SPACECRAFT
IMAGES AND MORE THAN 100 LINE
DRAWINGS, SUMMARY DIAGRAMS.
- **RESOURCES** – LINK TO MISSION HOME PAGES.

B. SCIENCE WITH SUBSTANCE

**TEXT REVIEWED BY EXPERTS IN THE FIELD FOR
ACCURACY, COMPLETENESS AND DEPTH.**

C. HISTORICAL AUTHORITY

TEXT INCLUDES HISTORICAL DEVELOPMENT OF KEY DISCOVERIES AND CONCEPTS.

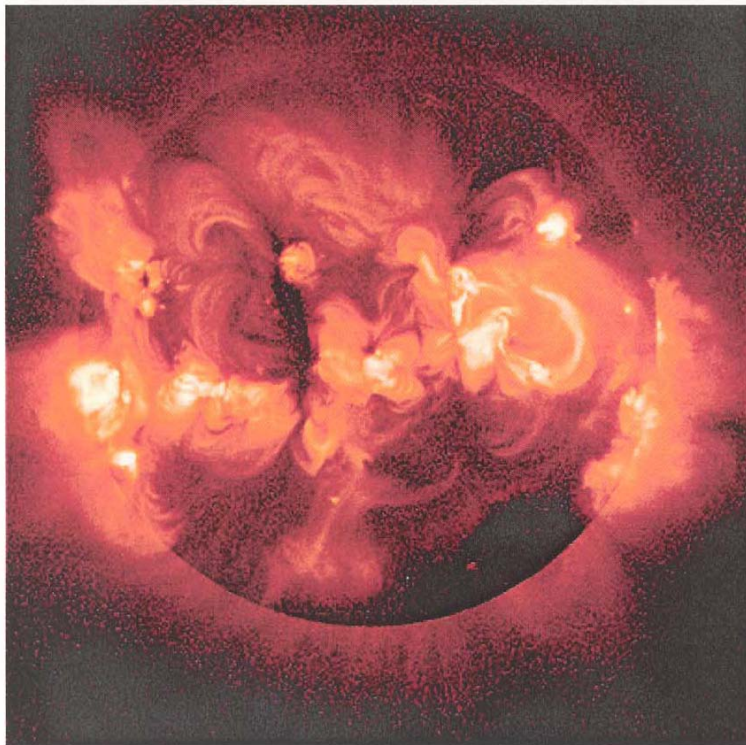
D. HUMAN ELEMENT

- **TEXT – PERSONALITIES, METAPHORS.**
- **TOPICS OF DIRECT HUMAN CONCERN –**
GLOBAL WARMING, ASTEROIDS COLLIDE
WITH EARTH, LIFE ON MARS.

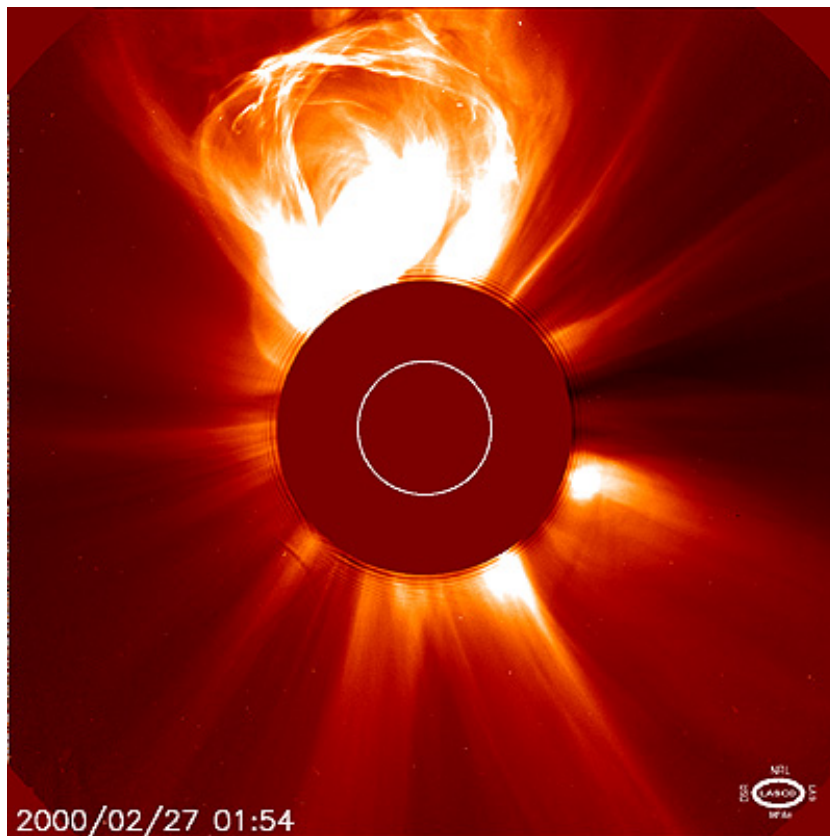
E. NEW SPACE SCIENCE

- SUN IN X-RAYS.
- THE EXPLOSIVE SUN.
- WATER ON MARS.
- ORBITING ASTEROID EROS.

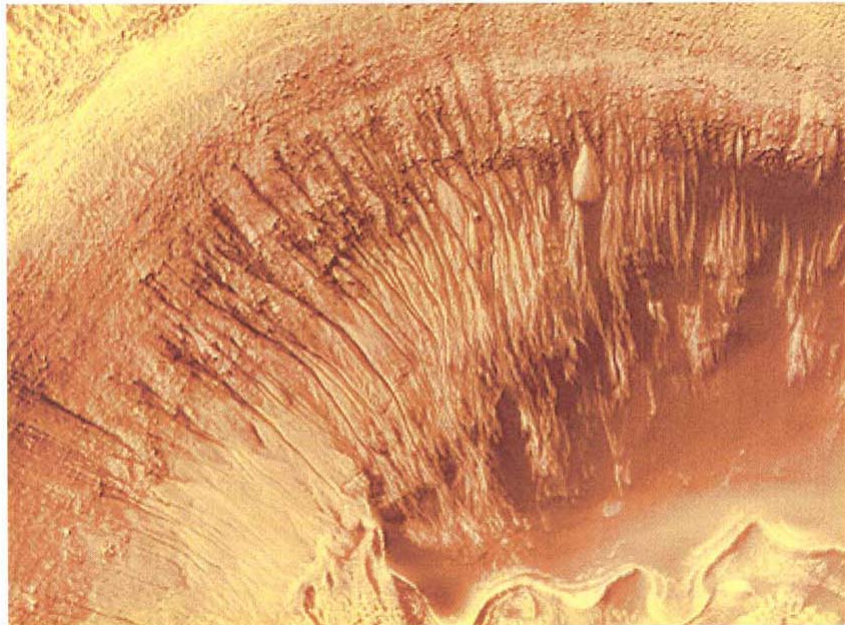
The Sun In X-rays



Coronal Mass Ejection

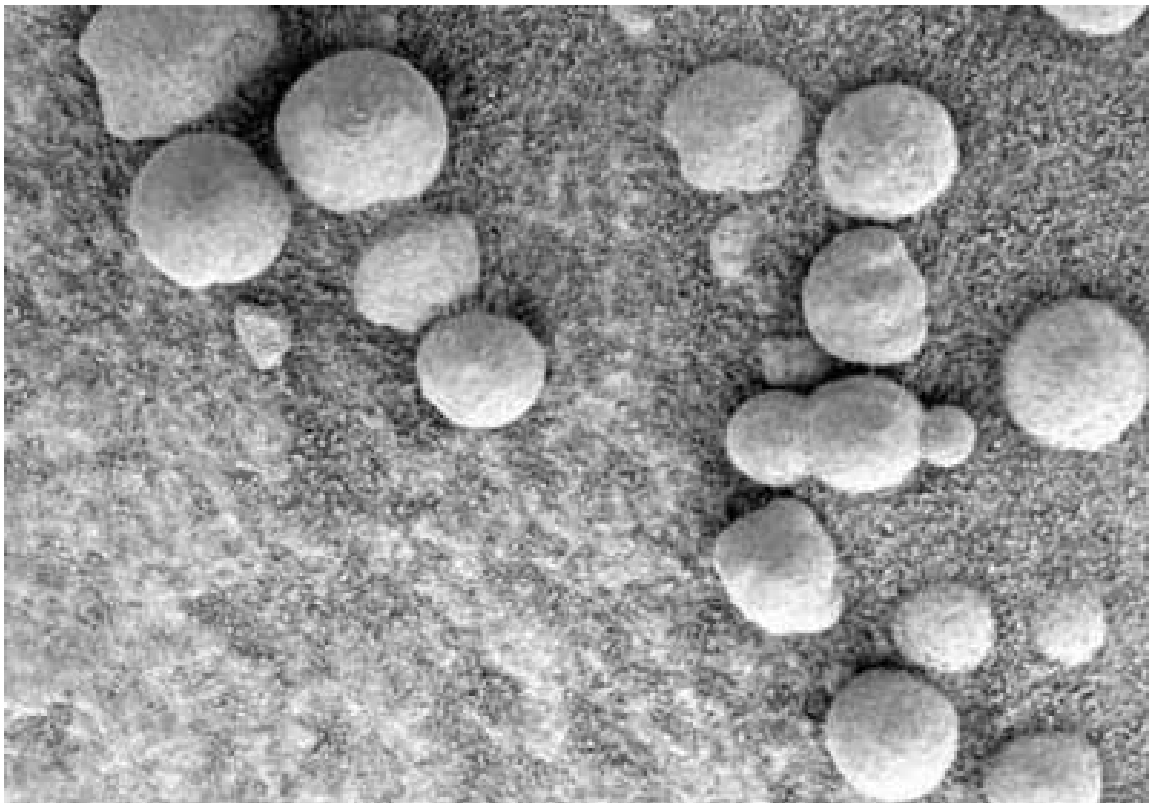


Martian Gullies

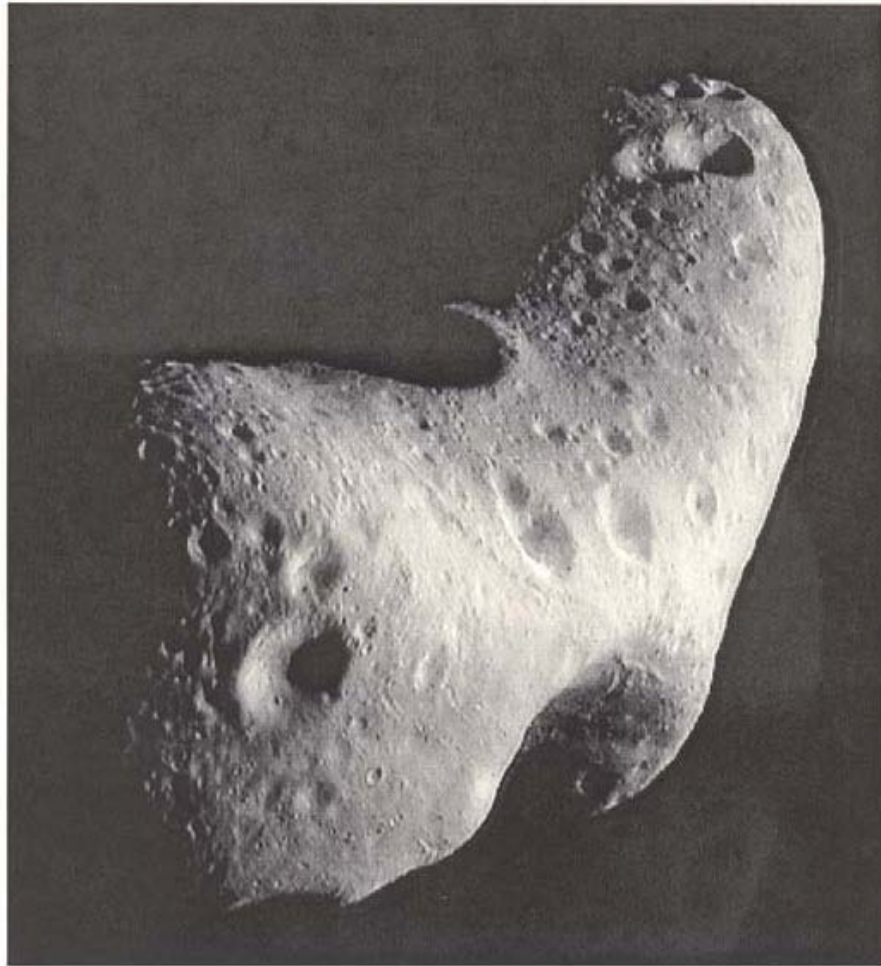


OPPORTUNITY ROVER 2004/2005

- **LIQUID WATER ONCE FLOWED ACROSS MARS**
- **HENCE MARS WAS ONCE HABITABLE**
- **ROUND PEBBLES, IRON MINERALS, SULFUR SALTS FORMED IN FLOWING WATER.**
- **EXPOSED BEDROCK UNEVEN LAYERS – FOSSILIZED SEDIMENTARY RIPPLES OF FLOWING WATER.**



Asteroid 433 Eros



2) RELEVANCE TO NASA

A. MISSIONS ON WEB AT RESOURCES TAB AND IN TEXT

Cassini/Huygens

Deep Space 1

Galileo

Magellan

Mars Global Surveyor

2001 Mars Odyssey

Mars Exploration Rovers

NEAR

SOHO

Stardust

Ulysses

Yohkoh

B. MISSIONS TO BE ADDED TO WEB AND FUTURE BOOKS

Chandra X-ray Observatory
COsmic Background Explorer,
COBE
Cosmic Gamma Ray Observatory,
CGRO
Hipparcos
Hubble Space Telescope
Röntgen SATellite, ROSAT
Spitzer Space Telescope
Uhuru
Wilkinson Microwave Anisotropy
Probe, WMAP

3) APPLICATION TO NASA MISSIONS AND PROGRAMS

- **USE BY NASA SCIENTISTS**
- **USE IN EDUCATION**
- **USE IN PUBLIC OUTREACH**

4) TRACKING

- **WEB SITE OVER MILLION
HITS A YEAR**
- **BOOK SALES IN
THOUSANDS**
- **BOOKS VERY WELL
REVIEWED**

5) UPCOMING PLANS

- **ASTRONOMY & ASTROPHYSICS
– TIMELINE AND DICTIONARY**

- A. CONCISE HISTORY

- B. COMPREHENSIVE CONCEPTS

- C. KEY NASA DISCOVERIES
AND MISSIONS

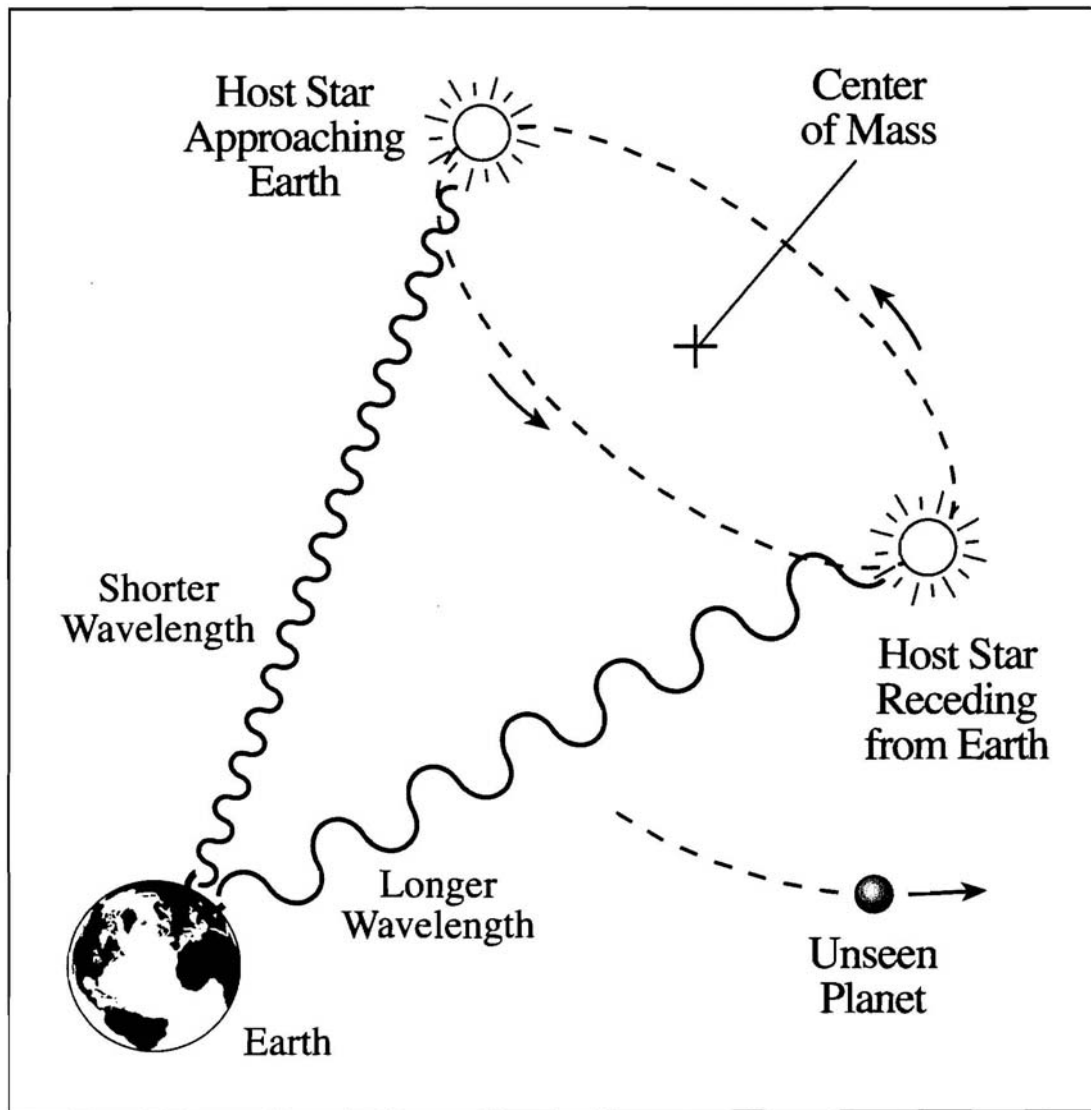
- D. WILL BE PUT ON WEB

- **PARTING THE COSMIC VEIL**

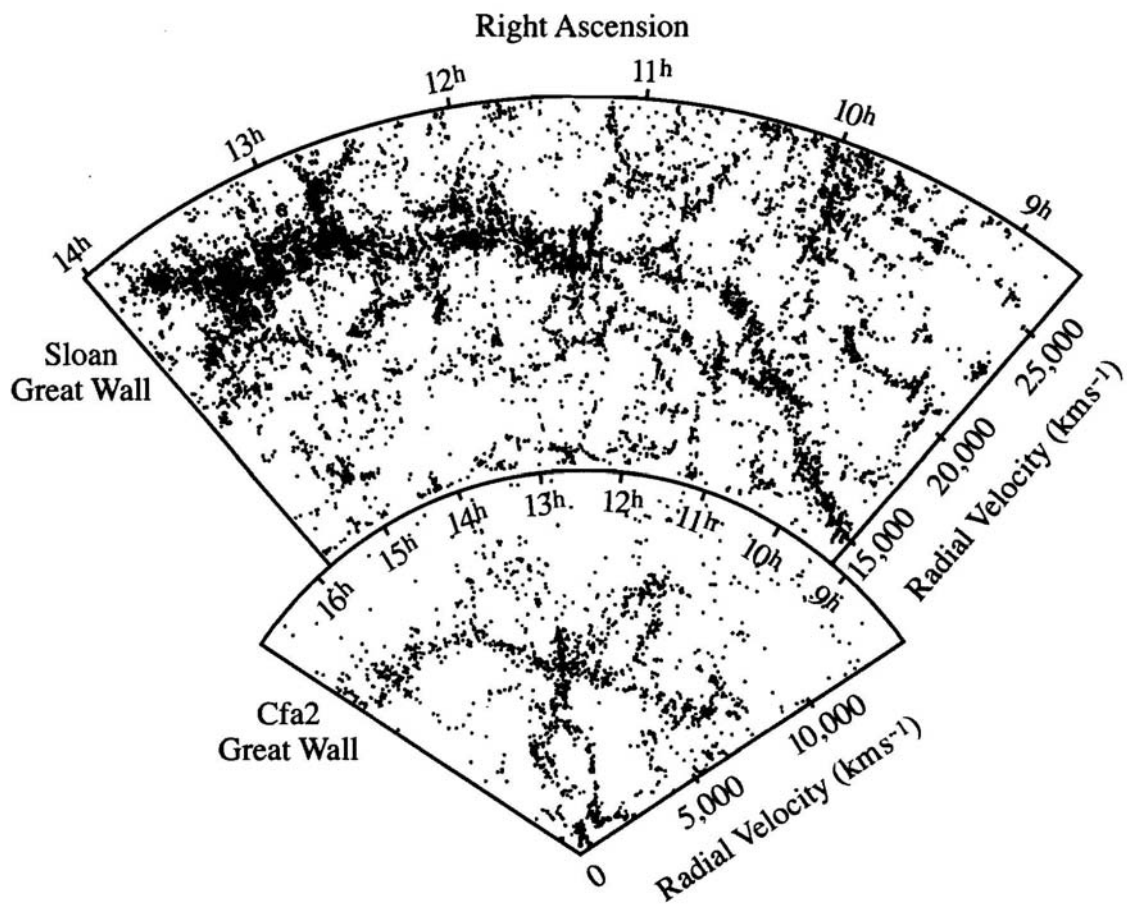
- A. NEW WORLDS – PLANETS
AROUND OTHER STARS

- B. MOTION, CONTENT AND
FORM – STRUCTURE OF
EXPANDING UNIVERSE
- C. VIOLENT UNIVERSE – X-
RAY PULSARS, BLACK
HOLES, GAMMA-RAY
BURSTS, BIG BANG
- D. FULLNESS OF SPACE – DARK
MATTER AND DARK
ENERGY
- E. ORIGINS AND DESTINIES –
COSMIC EVOLUTION,
BEFORE THE BIG BANG,
LIFE ELSEWHERE
- **SUN, EARTH AND SKY,
SECOND EDITION, TRACE,
RHESSI, MANY LANGUAGES**

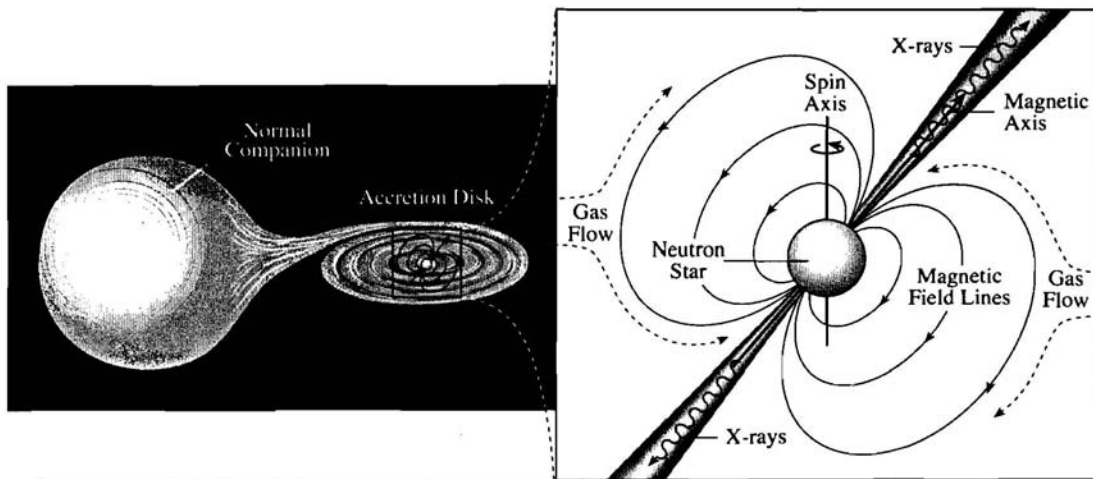
Planets Around Other Stars



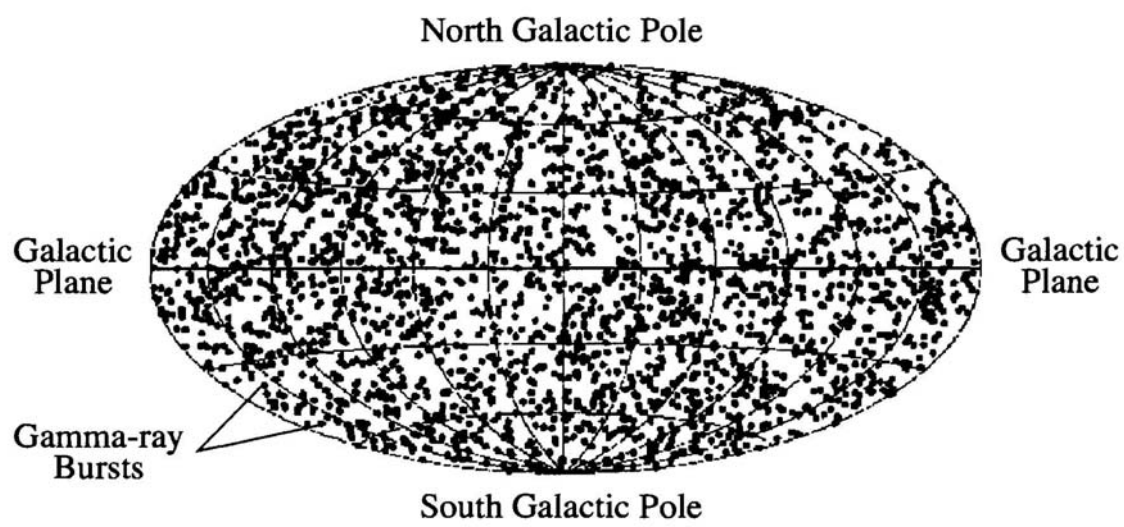
Structure of Expanding Universe



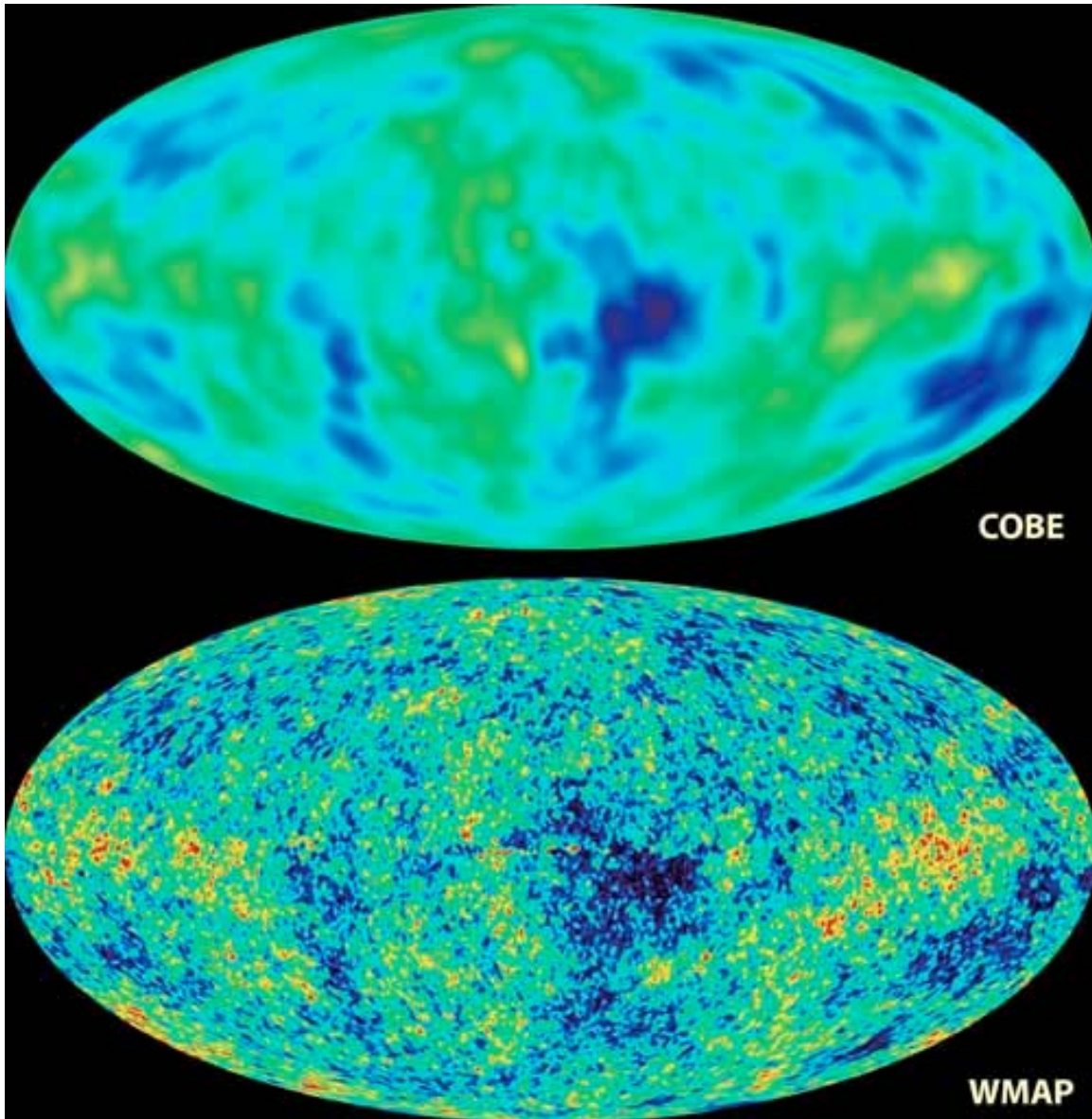
X-ray Pulsar



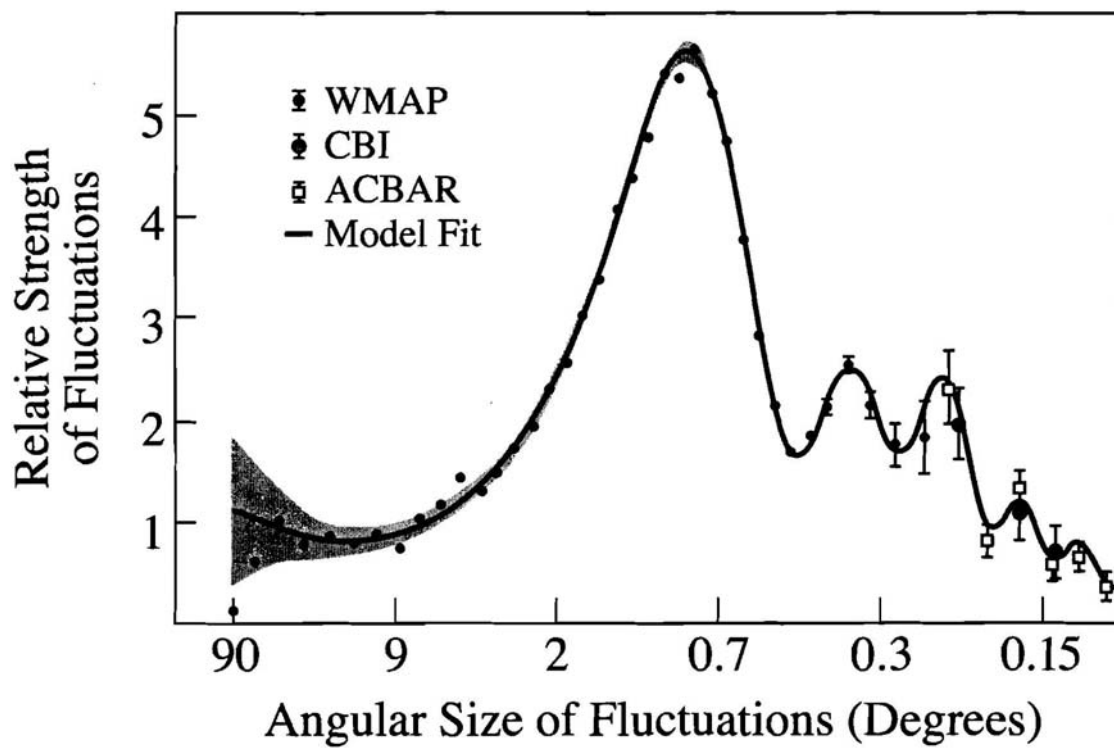
Gamma – Ray Bursts



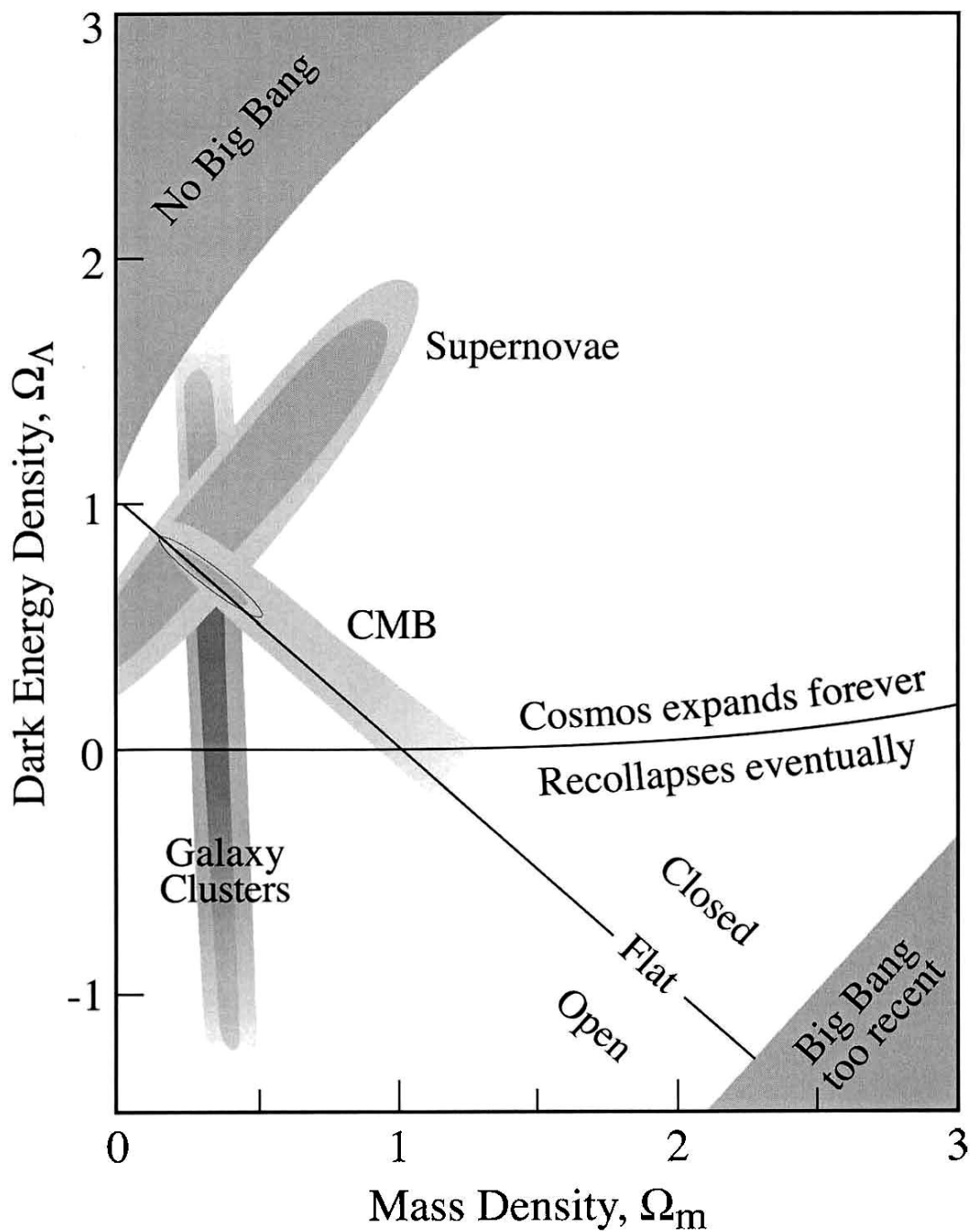
Relic Radiation of Big Bang



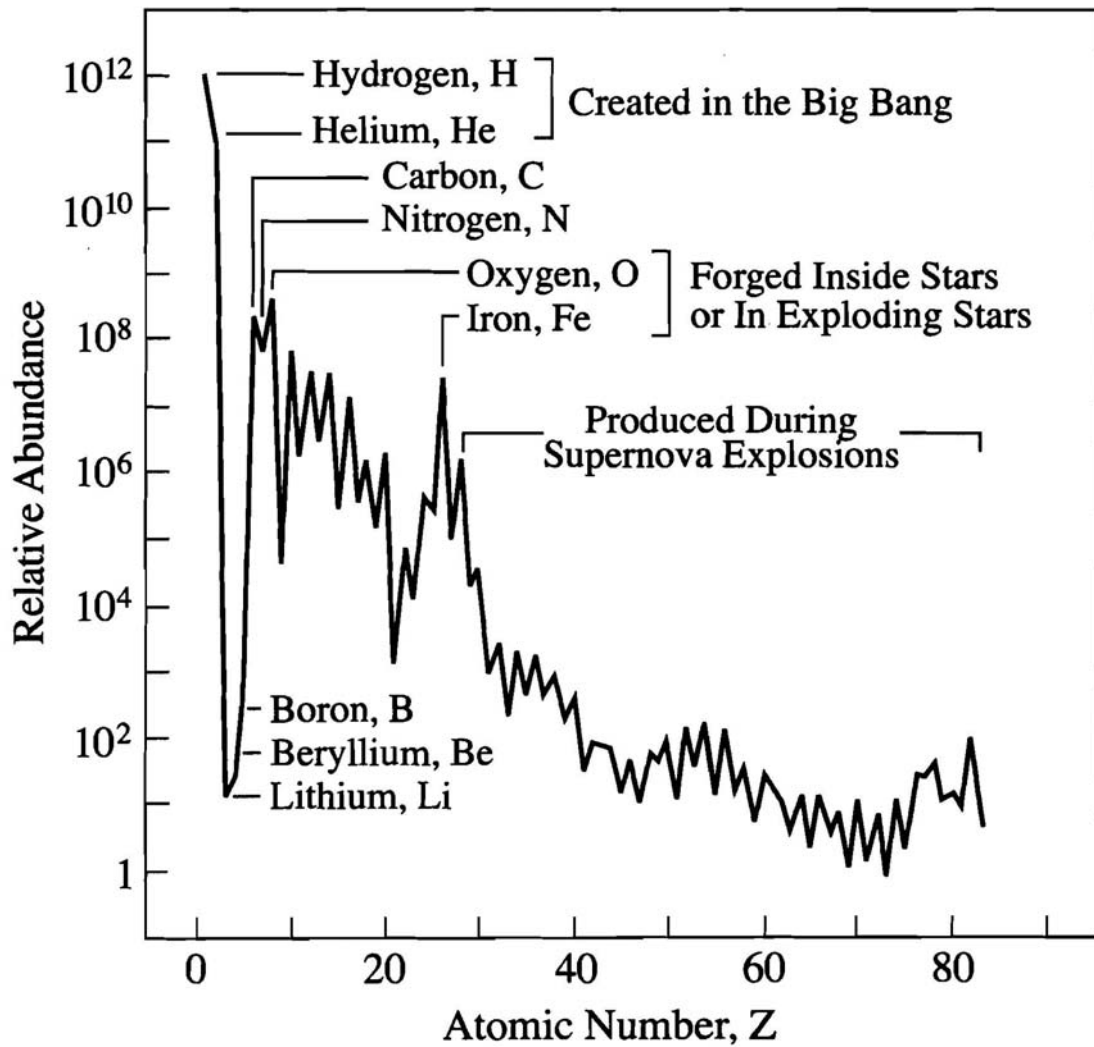
Big Bang Ripples



Dark Matter, Dark Energy



Origin of the Chemical Elements



NASA'S COSMOS PROJECT –
RELATED ACTIVITIES 2004-2005

ORGANIZING COMMITTEES
INTERNATIONAL HELIOPHYSICAL
YEAR (2007) – UNITED NATIONS –
NASA, See <http://ihy.gsfc.nasa.gov>

EDUCATION CURRICULUM FOR
SPACE SCIENCE by Kenneth R. Lang,
SPACE POLICY 20, 297-303 (2004),
FOCUS COSMOS WEB SITE

KEYNOTE SPEAKER: UN-ESA-
CHINA, SUN, MOONS AND
PLANETS, BEIJING, MAY 2004.

ENCYCLOPEDIA OF PHYSICS – THE
HUBBLE EFFECT
ENCYCLOPEDIA OF GEOLOGY –
THE SUN